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 JCS20 U.S. PTO
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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

| | |
|--|--|
| Attorney Docket No. | 447 |
| First Inventor or Application Identifier | Bradley Dee Carlson |
| Title | INTELLIGENT TELEPHONE NUMBER DIALER AND METHOD |
| Express Mail Label No. | EM281733260 |

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

- ☒ * Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
- ☒ Specification [Total Pages 18]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
- ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 8]
- Oath or Declaration [Total Pages 4]
 - ☒ Newly executed (original or copy)
 - ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 17 completed)
(Note Box 5 below)
 - ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).
- ☐ Incorporation By Reference (useable if Box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

 ADDRESS TO: Assistant Commissioner for Patents
 Box Patent Application
 Washington, DC 20231

- ☐ Microfiche Computer Program (Appendix)
- Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - ☐ Computer Readable Copy
 - ☐ Paper Copy (identical to computer copy)
 - ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

- ☐ Assignment Papers (cover sheet & document(s))
- ☐ 37 C.F.R. §3.73(b) Statement (when there is an assignee) ☐ Power of Attorney
- ☐ English Translation Document (if applicable)
- ☒ Information Disclosure Statement (IDS)/PTO-1449 ☒ Copies of IDS Citations
- ☐ Preliminary Amendment
- ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
- ☒ Statement(s) ☐ Statement filed in prior application, (PTO/SB/09-12) Status still proper and desired
- ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
- ☐ Other:

* NOTE FOR ITEMS 1 & 14: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No. _____
 Prior application information: Examiner _____ Group / Art Unit: _____

18. CORRESPONDENCE ADDRESS

☐ Customer Number or Bar Code Label (Insert Customer No. or Attach bar code label here) or ☒ Correspondence address below

| | | | | | |
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|-------------------|------------------------|-----------------------------------|--------------|
| Name (Print/Type) | William E. Hein | Registration No. (Attorney/Agent) | 26,465 |
| Signature | <i>William E. Hein</i> | Date | Oct. 3, 2000 |

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Applicant or Patentee: Bradley Dee Carlson et al.
Serial or Patent No.: _____
Filed or Issued: _____
For: INTELLIGENT TELEPHONE NUMBER DIALER AND METHOD

Attorney's
Docket No. 44

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) and 1.27(c)) - INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 5, United States Code, to the Patent and Trademark Office with regard to the invention entitled INTELLIGENT TELEPHONE NUMBER DIALER AND METHOD described in

- ☒ [X] the specification filed herewith
☐ [] application serial no. _____, filed _____.
☐ [] patent no. _____, issued _____.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed or licensed or am under an obligation under contract or law to assign, grant, convey or license any rights in the invention is listed below:

- ☒ [X] no such person, concern or organization
☐ [] persons, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME _____
ADDRESS _____

☐ [] INDIVIDUAL ☐ [] SMALL BUSINESS CONCERN ☐ [] NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

| | | |
|--|---|---|
| <u>Bradley Dee Carlson</u> NAME OF INVENTOR | <u>Joan Parkinson Firth</u> NAME OF INVENTOR | <u>Jeffrey Clark Heidel</u> NAME OF INVENTOR |
| <u><i>Bradley Dee Carlson</i></u> Signature of Inventor | <u><i>Joan Parkinson Firth</i></u> Signature of Inventor | <u><i>Jeffrey Clark Heidel</i></u> Signature of Inventor |
| <u>9/28/00</u> Date | <u>9/28/00</u> Date | <u>9/28/00</u> Date |

| | |
|--|--|
| <u>David John Michel</u> NAME OF INVENTOR | <u>Warren Wayne Stansberry</u> NAME OF INVENTOR |
| <u><i>David John Michel</i></u> Signature of Inventor | <u><i>Warren Wayne Stansberry</i></u> Signature of Inventor |
| <u>9-28-00</u> Date | <u>9-28-00</u> Date |

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FEE TRANSMITTAL

Patent fees are subject to annual revision on October 1.

These are the fees effective October 1, 1997.

Small Entity payments must be supported by a small entity statement, otherwise large entity fees must be paid. See Forms PTO/SB/09-12.

See 37 C.F.R. §§ 1.27 and 1.28.

TOTAL AMOUNT OF PAYMENT (\$ 395.00

Complete if Known

Application Number
Filing Date October 3, 2000
First Named Inventor Bradley Dee Carlson
Examiner Name
Group / Art Unit
Attorney Docket No. 447

PTO
09/678487
10/03/00

METHOD OF PAYMENT (check one)

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit
Account
Number
Deposit
Account
Name

☐ Charge Any Additional
Fee Required Under
37 C.F.R. §§ 1.16 and 1.17

☐ Charge the Issue Fee Set in
37 C.F.R. § 1.16 at the Mailing
of the Notice of Allowance

2. ☒ Payment Enclosed:

☒ Check ☐ Money
Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

| Large Entity Fee Code (\$) | Small Entity Fee Code (\$) | Fee Description | Fee Paid |
|-------------------------------|-------------------------------|------------------------|----------|
| 101 790 | 201 395 | Utility filing fee | 355.00 |
| 106 330 | 206 165 | Design filing fee | |
| 107 540 | 207 270 | Plant filing fee | |
| 108 790 | 208 395 | Reissue filing fee | |
| 114 150 | 214 75 | Provisional filing fee | |

SUBTOTAL (1) (\$355.00

2. EXTRA CLAIM FEES

| Total Claims | Extra Claims | Fee from below | Fee Paid |
|----------------------|--------------|----------------|----------|
| 17 | -20** = 0 | X | |
| Independent Claims 4 | -3** = 1 | X 40 | 40.00 |
| Multiple Dependent | | | 40.00 |

**or number previously paid, if greater; For Reissues, see below

| Large Entity Fee Code (\$) | Small Entity Fee Code (\$) | Fee Description |
|-------------------------------|-------------------------------|--|
| 103 22 | 203 11 | Claims in excess of 20 |
| 102 82 | 202 41 | Independent claims in excess of 3 |
| 104 270 | 204 135 | Multiple dependent claim, if not paid |
| 109 82 | 209 41 | ** Reissue independent claims over original patent |
| 110 22 | 210 11 | ** Reissue claims in excess of 20 and over original patent |

SUBTOTAL (2) (\$40.00

FEE CALCULATION (continued)

3. ADDITIONAL FEES

| Large Entity Fee Code (\$) | Small Entity Fee Code (\$) | Fee Description | Fee Paid |
|-------------------------------|-------------------------------|--|----------|
| 105 130 | 205 65 | Surcharge - late filing fee or oath | |
| 127 50 | 227 25 | Surcharge - late provisional filing fee or cover sheet | |
| 139 130 | 139 130 | Non-English specification | |
| 147 2,520 | 147 2,520 | For filing a request for reexamination | |
| 112 920* | 112 920* | Requesting publication of SIR prior to Examiner action | |
| 113 1,840* | 113 1,840* | Requesting publication of SIR after Examiner action | |
| 115 110 | 215 55 | Extension for reply within first month | |
| 116 400 | 216 200 | Extension for reply within second month | |
| 117 950 | 217 475 | Extension for reply within third month | |
| 118 1,510 | 218 755 | Extension for reply within fourth month | |
| 128 2,060 | 228 1,030 | Extension for reply within fifth month | |
| 119 310 | 219 155 | Notice of Appeal | |
| 120 310 | 220 155 | Filing a brief in support of an appeal | |
| 121 270 | 221 135 | Request for oral hearing | |
| 138 1,510 | 138 1,510 | Petition to institute a public use proceeding | |
| 140 110 | 240 55 | Petition to revive - unavoidable | |
| 141 1,320 | 241 660 | Petition to revive - unintentional | |
| 142 1,320 | 242 660 | Utility issue fee (or reissue) | |
| 143 450 | 243 225 | Design issue fee | |
| 144 670 | 244 335 | Plant issue fee | |
| 122 130 | 122 130 | Petitions to the Commissioner | |
| 123 50 | 123 50 | Petitions related to provisional applications | |
| 126 240 | 126 240 | Submission of Information Disclosure Stmt | |
| 581 40 | 581 40 | Recording each patent assignment per property (times number of properties) | |
| 146 790 | 246 395 | Filing a submission after final rejection (37 CFR 1.129(a)) | |
| 149 790 | 249 395 | For each additional invention to be examined (37 CFR 1.129(b)) | |

Other fee (specify) _____

Other fee (specify) _____

* Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)

SUBMITTED BY

Typed or
Printed Name William E. Hein

Signature

Date 10/3/00

Complete (if applicable)

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INTELLIGENT TELEPHONE NUMBER DIALER AND METHOD

Field of the Invention

This invention relates generally to telephone number dialers and, more specifically, to an apparatus and method for automatically transmitting a ten or eleven-digit telephone number following entry by the user of only a three-digit prefix followed by a four-digit suffix of the telephone number.

Background of the Invention

In recent years, various telephone companies have lobbied for more area codes within major metropolitan areas so that today many major cities have two or more telephone area codes. As a result, instead of dialing seven digits as in the past to make a local call, users are now subjected to the inconvenience of dialing ten digits and, in some cases, eleven. Entering telephone numbers into a cellular phone, especially while driving a motor vehicle, has thus become even more dangerous.

Automatic telephone area code dialers are known in the prior art. Exemplary of this art is U.S. Patent No. 5,895,896 to Rosen, directed to a telephone line prefix dialer for automatically transmitting a local area code as a prefix to a call made within the same area code. This prior art device is disadvantageous in that it has the capability of transmitting only a single predetermined area code, thus rendering it useless in today's metropolitan areas encompassing multiple area codes. Moreover, if the user of this device wishes to dial a number within an area code that is outside the single predetermined local area code, he or she must, within a short time following receipt of a dial tone, "flash" the line to inhibit the device from transmitting the predetermined local area code to thereby allow the user to manually enter a different area code. This is

inconvenient and awkward for the user. Another known prior art reference is U.S. Patent No. 5,859,901 to Brendzel et al., directed to an intelligent call connection service that utilizes software and a database residing in a telephone utility central office switching center to automatically transmit an area code prefix to dialed telephone numbers, through analysis of the calling subscriber's calling pattern, taking into account the distance between the calling and called parties. This system relies totally on modification, at tremendous cost, of a telephone utility's central office switching equipment.

It would thus be advantageous to provide a device that would serve to automatically transmit the required area code, based on the telephone number prefix entered by the user, so that the user need then enter only the seven-digit telephone number and, in rare instances, a selection digit in the event the desired prefix is valid in multiple area codes. Such a device could be made to be connectable between an existing telephone and a telephone line outlet to which it is normally connected, could be incorporated into a conventional telephone, or could be incorporated into the telephone utility's central office switching equipment.

Summary of the Invention

As used herein, a ten-digit telephone number is one that includes a three-digit area code, followed by a three-digit prefix, and ending with a four-digit suffix. An eleven-digit telephone number is one that includes the digit one, followed by a three-digit area code, followed by a three-digit prefix, and ending with a four-digit suffix.

The present invention is directed to an apparatus and method for automatically dialing a ten or eleven-digit telephone number following entry by the user of only the three-digit prefix and four-digit suffix of the telephone number. In one embodiment, the

present invention may be a separate device having the ability to decode DTMF tones that is connected between an existing telephone set and a telephone line wall outlet. The device includes a microprocessor for receiving the decoded digits and comparing them to a multiplicity of digits stored therein as telephone number prefixes. Each stored prefix is associated with a particular area code, so that when a telephone number prefix is entered by the user, its associated area code is automatically transmitted before the seven digits representing the prefix and suffix of the telephone number entered by the user are transmitted. A switch within the device allows the telephone line to which the device is connected to be placed off-hook or on-hook. Selection software within the device selects one area code from a multiplicity of area codes associated with an entered three-digit telephone number prefix, based upon the entered four-digit suffix of that telephone number. A visual display device or a voice synthesizer provides an indication to the user that the prefix of the telephone number entered is associated with more than one area code, allowing the user to enter a single digit for the purpose of selecting the desired area code. The data stored in the device may be programmably changed or updated.

The apparatus and method of the present invention, as briefly described in the preceding paragraph, may alternatively be contained within a standard telephone set. In accordance with another alternative, the apparatus and method of the present invention may be incorporated within a cellular telephone. Minimizing the number of digits that must be entered into a cellular telephone by the user when calling improves safety by reducing the amount of time that the user is distracted from operating his or her vehicle. The existing alphanumeric display on today's cellular telephones serves to display the complete ten-digit telephone number after the user has entered the three-digit prefix and

four-digit suffix of that number so that the complete number may be verified before it is transmitted. Also, the display or a voice synthesizer may be employed to present multiple area code selections, and the user then enters a selected area code by actuation a keyboard selection key or by an appropriate selection digit, which is interpreted by conventional voice recognition techniques. In accordance with a third alternative, the method of the present invention may be implemented within a telephone utility's switching center and other telephone utility systems as a software addition to existing user features. Doing so will enhance subscribers' acceptance of the ten or eleven-digit dialing requirement, since in most instances they need enter only seven digits and, in rare cases, a selection digit, when the entered prefix is valid in multiple area codes. Other applications of the present invention include telefax machines, personal computers, modems, etc.

Brief Description of the Drawings

Figure 1 is an overall block diagram of circuitry employed in the intelligent telephone number dialer of the present invention.

Figure 2 is a block diagram of the circuitry of Figure 1 illustrating the addition of a display for allowing the user to view multiple area codes in which a telephone number prefix entered by a user is valid.

Figure 3 is a block diagram of the circuitry of Figure 1 illustrating the addition of a voice synthesizer for audibly indicating multiple area codes in which a telephone number prefix entered by a user is valid.

Figures 4A-E are a flow chart illustrating the steps of the intelligent telephone number dialing method of the present invention.

Detailed Description of the Preferred Embodiment

Referring now to Figure 1, there are shown a conventional telephone instrument 2, a Dual Tone Multiple Frequency (DTMF) decoder 4, a microprocessor 6, a non-volatile memory 8, a telephone line switch block 10, a DTMF transmitter 12, a programming enabler 13, and an incoming telephone line 14. In the embodiment in which the intelligent telephone number dialer of the present invention is incorporated within conventional telephone 2, as opposed to being a separate device connected between conventional telephone 2 and incoming telephone line 14, the DTMF decoder 4 and the DTMF transmitter 12 would not be separately required, since these components form part of conventional telephone 2. In the embodiments in which the present invention is incorporated at a telephone utility's central office or within a cellular telephone, only a software implementation of the method steps of Figures 4A-E is required.

During a loss of power or failure of the circuitry of Figures 1-3, telephone 2 will operate normally. Memory 8 is preprogrammed with all of the three-digit telephone number prefixes and their associated area codes for a given geographical area. The data stored in memory 8 may be conventionally updated by downloading data from an Internet site or over telephone lines.

During operation of the device of Figure 1, the user employs telephone 2 to enter a seven-digit telephone number, which is received by microprocessor 6 through DTMF decoder 4 and temporarily stored in microprocessor 6. When microprocessor 6 determines that the first digit entered is not a one, zero, or nine, and that the first three digits entered match a three-digit telephone number prefix stored in memory 8,

microprocessor 6 enables switch block 10 to disconnect telephone 2 from telephone line 14 and to connect telephone 2 to an internal power supply to allow dialing to continue, while simulating an on-hook condition at telephone line 14. Following a short delay, microprocessor 6 again enables switch block 10 to take telephone line 14 off-hook and switch it to DTMF transmitter 12 for transmitting the area code retrieved from memory 8, followed by the associated three-digit prefix and the four-digit suffix entered by the user. When transmission of the entire ten-digit telephone number is complete, microprocessor 6 again enables switch block 10 to connect telephone line 14 to telephone 2 to allow the user to continue with the call.

In certain geographic areas, the digit one must be entered as the first digit of the telephone number to be called. This is referred to as eleven-digit dialing. In this case, when a prefix entered by the user is detected by microprocessor 6 as one stored in memory 8, the digit one will be transmitted by DTMF transmitter 12 prior to transmitting the associated area code. If the user enters one, nine, or zero as the first digit of a telephone number to be called, or if the first three digits entered are not associated with an area code stored in memory 8, the call will be allowed to go through as entered by the user without any intervention. Programming enabler 13 allows the conventional updating of the database stored in memory 8 by switch activation, an off-hook condition in the absence of an incoming call, or by a specific sequence of digits. In the event the user enters a telephone number prefix that is valid in more than one area code, a display 5 illustrated in Figure 2 is employed to display those area codes, along with an associated selection digit to be entered by the user for selecting a desired one of those area codes. Alternatively, the foregoing area code selection may be accomplished by means of a

voice synthesizer 7, as illustrated in Figure 3, which audibly alerts the user to the multiple area codes along with a digit to be entered to select the desired area code.

Referring now to Figures 4A-E, there is shown a flow chart of software performed by the intelligent telephone number dialer of Figures 1-3. When power is applied to the device, all variables, constants, and routines are initialized at block 18 to allow the device to sense an off-hook or on-hook condition in order to determine the start and finish of each telephone call at a decision block 20. If a call has ended, as indicated by an on-hook condition, then all variables, constants, and routines are reset for the next call at block 22. If a call has started, as indicated by an off-hook condition, then a test is performed at decision block 24 to determine if all digits have been entered by the user. If not, processing continues at point C of Figure 4C. If so, then a loop 26 is entered until all digits have been entered. If a talk flag is set, the telephone is connected to the line without any intervention by the device. The loop 26 continues without interruption until the call has ended, as indicated by an on-hook condition determined at decision block 20. If the talk flag is not set, as determined by loop 26, each entered digit is stored in a temporary memory, in accordance with block 28, and a check is performed at decision block 30 to determine if three digits have been entered. If less than three digits have been entered, processing continues in the main loop beginning at point A. If the first digit entered is zero, then the talk flag is set to prevent intervention by the device. If three or more digits have been entered, processing continues at subroutine B of Figure 4B.

Referring now to Figure 4B, if an area code flag is not set, as determined at decision block 34, processing continues at subroutine D of Figure 4D to retrieve the selected area code, as described hereinbelow. When subroutine D returns from a call

check to determine if the first three digits entered are associated with a valid area code, a negative determination causes an area code flag to be set to invalid, the talk flag to be set at block 38, and processing to continue at main loop A. This condition usually indicates that the user has begun entering a number other than a seven-digit number having a valid prefix, such as a 1XX out-of-area number, a 911 emergency number, or some other invalid prefix number. If the first three digits entered are associated with a valid area code, a determination is made at decision block 44 as to whether the line has been disconnected from the DTMF transmitter following the correct number of program loops. If not, the line is disconnected at block 42. If the area code flag is set, as determined at decision block 34, and the line has been disconnected as the result of the correct number of program loops being performed, a determination is made at decision block 46 as to whether the line has been connected to the DTMF transmitter following the correct number of program loops. If the area code flag is not set, the line is connected at block 48. If the line has been previously connected to the DTMF transmitter following the correct number of program loops, then processing continues at point C of Figure 4C.

Referring now to Figure 4C, the next area code or the next digit stored in memory is sent in the proper sequence by the DTMF transmitter at block 52. If all area code digits and all stored digits have not been sent by the DTMF transmitter, as determined at decision block 54, the processing continues at the main loop beginning at point A of Figure 4A. If all area code digits and all stored digits have been sent by the DTMF transmitter, as determined at decision block 54, the telephone is then reconnected to the line, the talk flag is set to prevent intervention by the device, and processing continues at the main loop beginning at point A of Figure 4A.

Referring now to the subroutine of Figure 4D, the first three digits entered are searched in memory, in accordance with block 60. If the first three digits entered are the symbol sequence *1#, processing continues at point E of Figure 4E. If seven digits have been entered, as determined at decision block 62, the memory is searched at block 68 to determine if a unique area code is associated with the prefix portion of the seven-digit telephone number entered. If a display device is available and more than one area code is associated with the seven-digit number entered, those area codes are displayed, each with an associated selection digit to allow the user to select the desired area code, in accordance with block 66. If a display device is not available, a determination is made at decision block 70 as to whether a voice synthesizer is available. If yes, an audio message to enable the user to select the desired area code is sent to the telephone headset, in accordance with block 72. If neither a voice synthesizer nor a display device is available, the first area code found in memory is selected, in accordance with block 74. If fewer than seven digits have been entered by the user and only one area code is associated with the first three digits entered, the selection digit for that area code is set in accordance with block 68. If a selection digit has been entered by the user, as determined at decision block 76, the area code flag is set, in accordance with block 78, and processing is returned. If a selection digit has not been entered by the user, as determined at decision block 76, the area code flag is not set, and processing is returned.

Referring now to Figure 4E, if memory programming is not enabled, as determined at decision block 81, the talk flag is set, and processing continues at point A of Figure 4A. If memory programming is enabled, data may be received by the device over the telephone line that is representative of telephone number prefixes and their

associated area codes, in accordance with block 82. The received data may include the digit one to indicate an out-of-area telephone number to thereby accommodate eleven-digit dialing when necessary. If a delimiter in the form of the symbol sequence *2# is received, the previously received data is then stored in memory, the talk flag is set, and processing continues at point A of Figure 4A. If a delimiter in the form of the symbol sequence *9# is received, as determined at decision block 86, processing continues at point E for receiving additional data.

We claim:

1. An intelligent telephone number dialer for dialing a telephone number in the form of a first plurality of digits that is greater than a second plurality of digits entered by a user as being representative of a prefix portion and a suffix portion of that telephone number, the telephone number dialer comprising:

a keypad for allowing the user to enter telephone number digits;

a microprocessor coupled to a telephone line and to the keypad;

a non-volatile memory coupled to the microprocessor for storing a database of telephone number area codes for a selected geographic area and associated telephone number prefixes valid in each of the stored telephone number area codes;

the microprocessor being responsive to entry by the user of said second plurality of digits for searching said database to locate the one of said stored prefixes represented by ones of said second plurality of digits and the associated one of said stored area codes in which said located stored prefix is valid, said microprocessor thereupon being operative for initiating dialing of said first plurality of digits in the form of said located area code, followed by said second plurality of digits previously entered by the user.

2. An intelligent telephone number dialer as in claim 1, wherein:

said first plurality of digits comprises at least ten digits; and

said second plurality of digits comprises seven digits, the first three of which comprise said prefix portion and the remaining four of which comprise said suffix portion.

3. An intelligent telephone number dialer for dialing a telephone number in the form of a first plurality of digits that is greater than a second plurality of digits entered by

a user as being representative of a prefix portion and a suffix portion of that telephone number, the telephone number dialer comprising:

a keypad for allowing the user to enter telephone number digits;

a microprocessor coupled to a telephone line and to the keypad;

a non-volatile memory coupled to the microprocessor for storing a database of telephone number area codes for a selected geographic area and associated telephone number prefixes valid in each of the stored telephone number area codes;

the microprocessor being responsive to entry by the user of said second plurality of digits for searching said database to locate the one of said stored prefixes represented by ones of said second plurality of digits and the associated one or more of said stored area codes in which said located stored prefix is valid, said microprocessor thereupon being operative, in the event said located stored prefix is valid in a plurality of area codes, for enabling selection of one of said plurality of located area codes and for then initiating dialing of said selected located area code, followed by said second plurality of digits previously entered by the user.

4. An intelligent telephone number dialer as in claim 3, wherein:

said first plurality of digits comprises at least ten digits; and

said second plurality of digits comprises seven digits, the first three of which comprise said prefix portion and the remaining four of which comprise said suffix portion.

5. An intelligent telephone number dialer as in claim 3, wherein said microprocessor is operative for automatically selecting said one of said plurality of located area codes.

6. An intelligent telephone number dialer as in claim 5, wherein said microprocessor automatically selects said one of said plurality of located area codes based upon said suffix portion of said second plurality of digits previously entered by the user.

7. An intelligent telephone number dialer as in claim 3, further comprising a display for visually display information to the user; said microprocessor being further operative, following searching of said database, for initiating a display of each one of said plurality of located area codes, together with one or more associated selection digits; said microprocessor thereafter being responsive to entry by the user of one of said one or more selection digits for selecting the associated one of said plurality of located area codes.

8. An intelligent telephone number dialer as in claim 3, further comprising a voice synthesizer for providing voice messages to the user; said microprocessor being further operative, following searching of said database, for initiating a voice message containing each one of said plurality of located area codes, together with an associated one or more selection digits; said microprocessor thereafter being responsive to entry by the user of one of said one or more selection digits for selecting the associated one of said plurality of located area codes.

9. A method for dialing a telephone number in the form of a first plurality of digits that is greater than a second plurality of digits representative of a prefix portion and a suffix portion of that telephone number, the method comprising:

storing a database of telephone number area codes for a selected geographic area and associated telephone number prefixes valid in each of the stored telephone number area codes;

entering said second plurality of digits;

searching said database to locate the one of said stored prefixes represented by ones of said second plurality of digits and the associated one of said stored area codes in which said located stored prefix is valid; and

initiating dialing of said located area code, followed by said second plurality of digits previously entered.

10. A method as in claim 9, wherein:

said first plurality of digits comprises at least ten digits; and

said second plurality of digits comprises seven digits, the first three of which comprise said prefix portion and the remaining four of which comprise said suffix portion.

11. A method for dialing a telephone number in the form of a first plurality of digits that is greater than a second plurality of digits representative of a prefix portion and a suffix portion of that telephone number, the method comprising:

storing a database of telephone number area codes for a selected geographic area and associated telephone number prefixes valid in each of the stored telephone number area codes;

entering said second plurality of digits;

searching said database to locate the one of said stored prefixes represented by ones of said second plurality of digits and an associated plurality of said stored area codes in which said located stored prefix is valid;

enabling selection of one of said plurality of located area codes; and

initiating dialing of said selected located area code, followed by said second plurality of digits previously entered.

12. A method as in claim 11, wherein:

said first plurality of digits comprises at least ten digits; and

said second plurality of digits comprises seven digits, the first three of which comprise said prefix portion and the remaining four of which comprise said suffix portion.

13. A method as in claim 11, wherein said one of said plurality of located area codes is selected on the basis of said suffix portion of said second plurality of digits previously entered.

14. A method as in claim 11, further comprising the steps of:

displaying each one of said plurality of located area codes, together with an associated one or more selection digits; and

entering one of said one or more associated selection digits to thereby select the associated one of said plurality of located area codes.

15. A method as in claim 11, further comprising the steps of:

providing a voice message containing each one of said plurality of located area codes, together with an associated one or more selection digits; and

entering one of said one or more associated selection digits to thereby select the associated one of said plurality of located area codes.

16. An intelligent telephone number dialer as in claim 1, wherein:

said microprocessor comprises a computer located in a telephone utility's central switching office; and

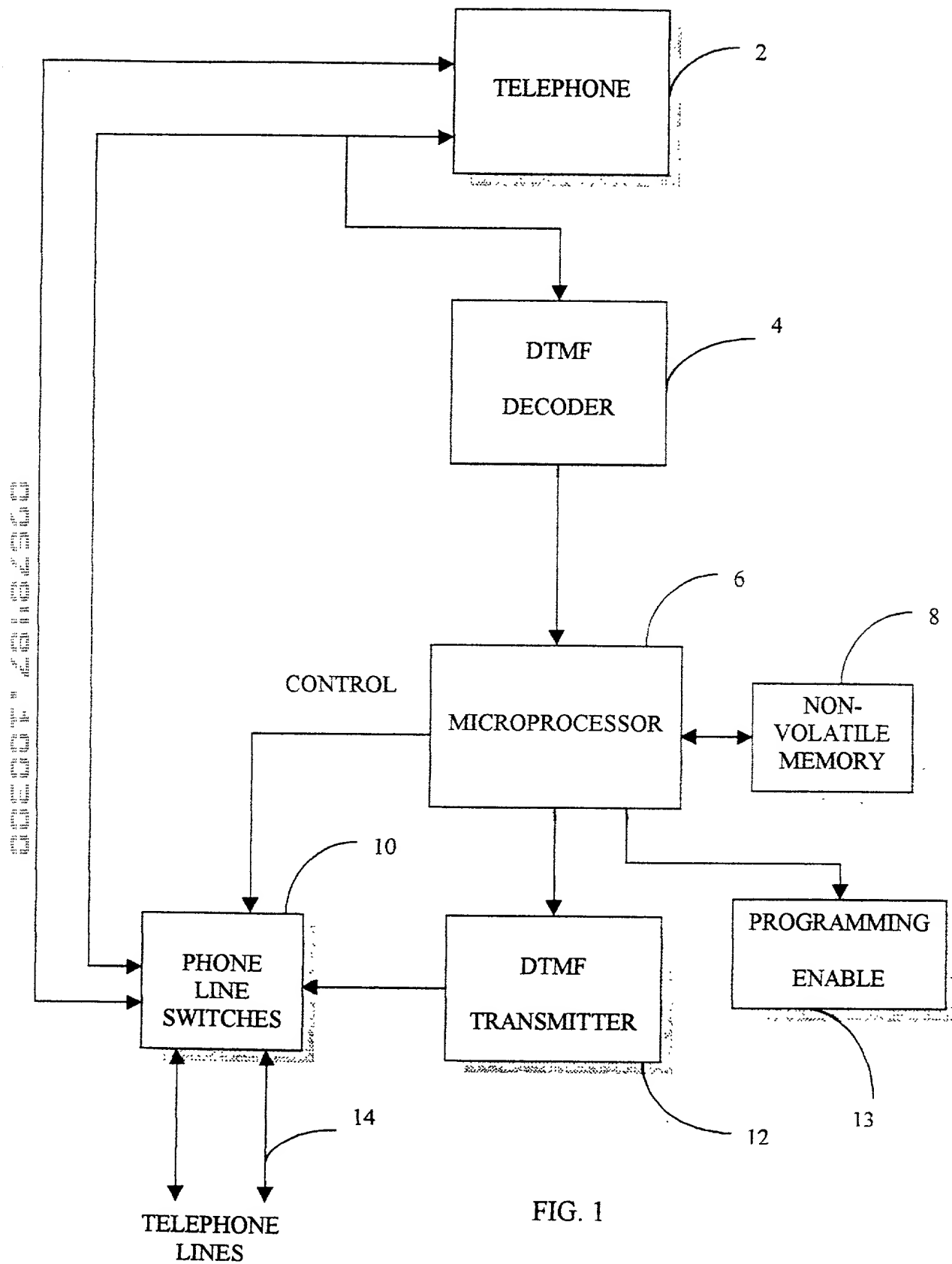
said non-volatile memory is located in said telephone utility's central switching office.

17. An intelligent telephone number dialer as in claim 1, wherein:

said microprocessor and said memory comprise a computer system located in a telephone utility's switching center.

Abstract of the Disclosure

A device and method for automatically dialing a telephone number in the form of a first plurality of digits that is greater than a second plurality of digits entered by the user as being representative of a prefix portion and a suffix portion of that telephone number by employing a stored look-up table to locate the digits that represent the difference between the first plurality of digits and the second plurality of digits.



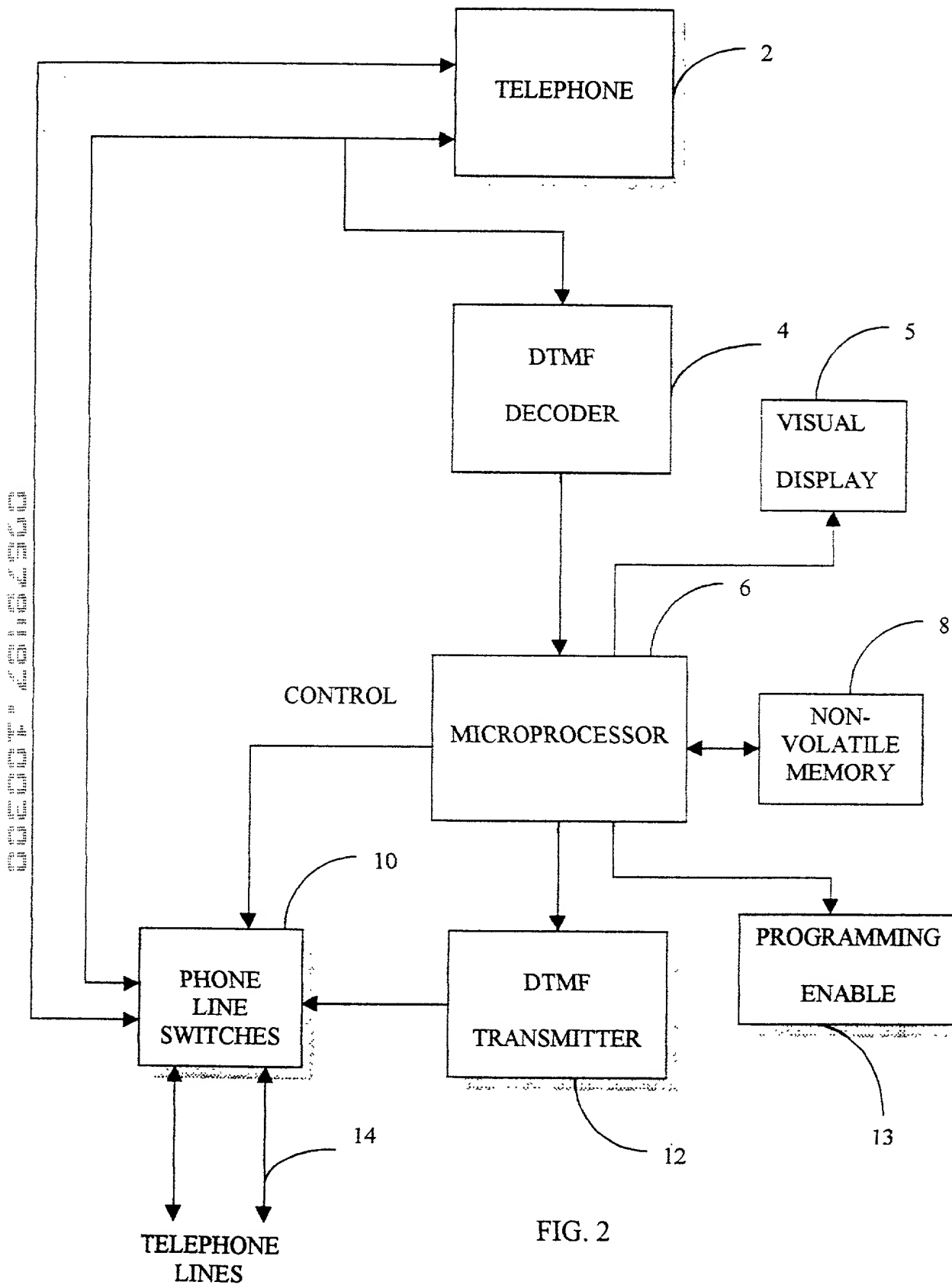
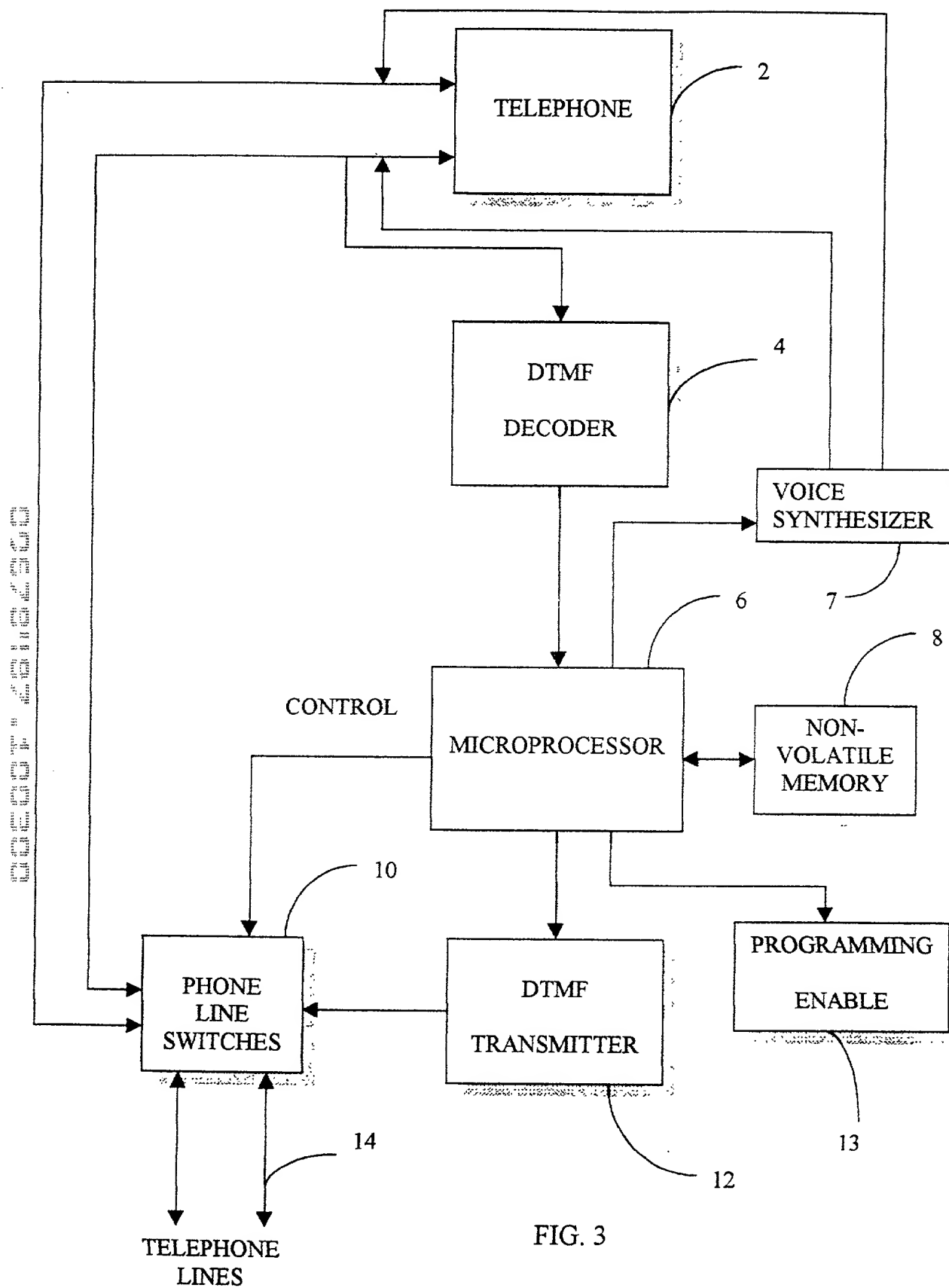


FIG. 2



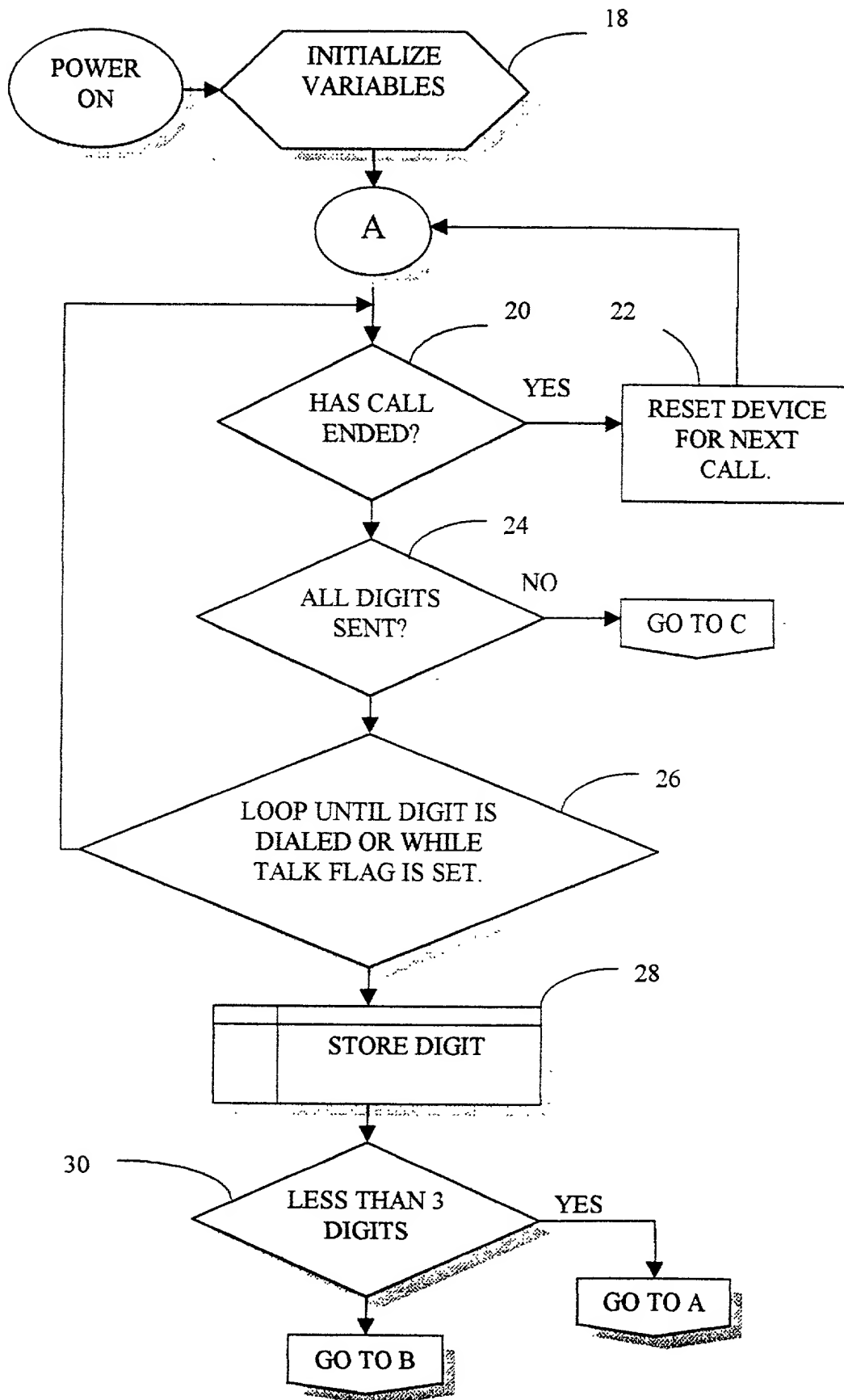


FIG. 4A

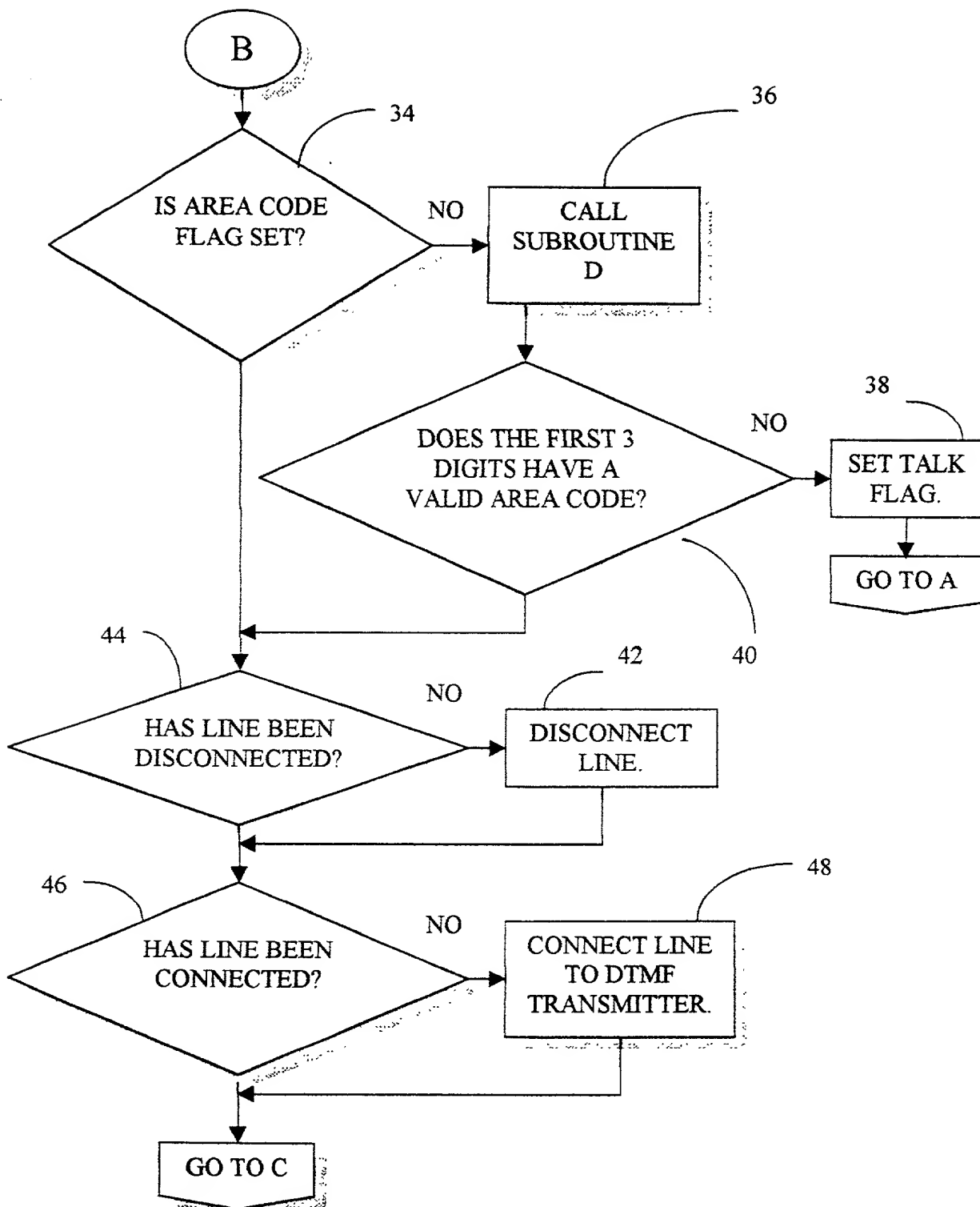


FIG. 4B

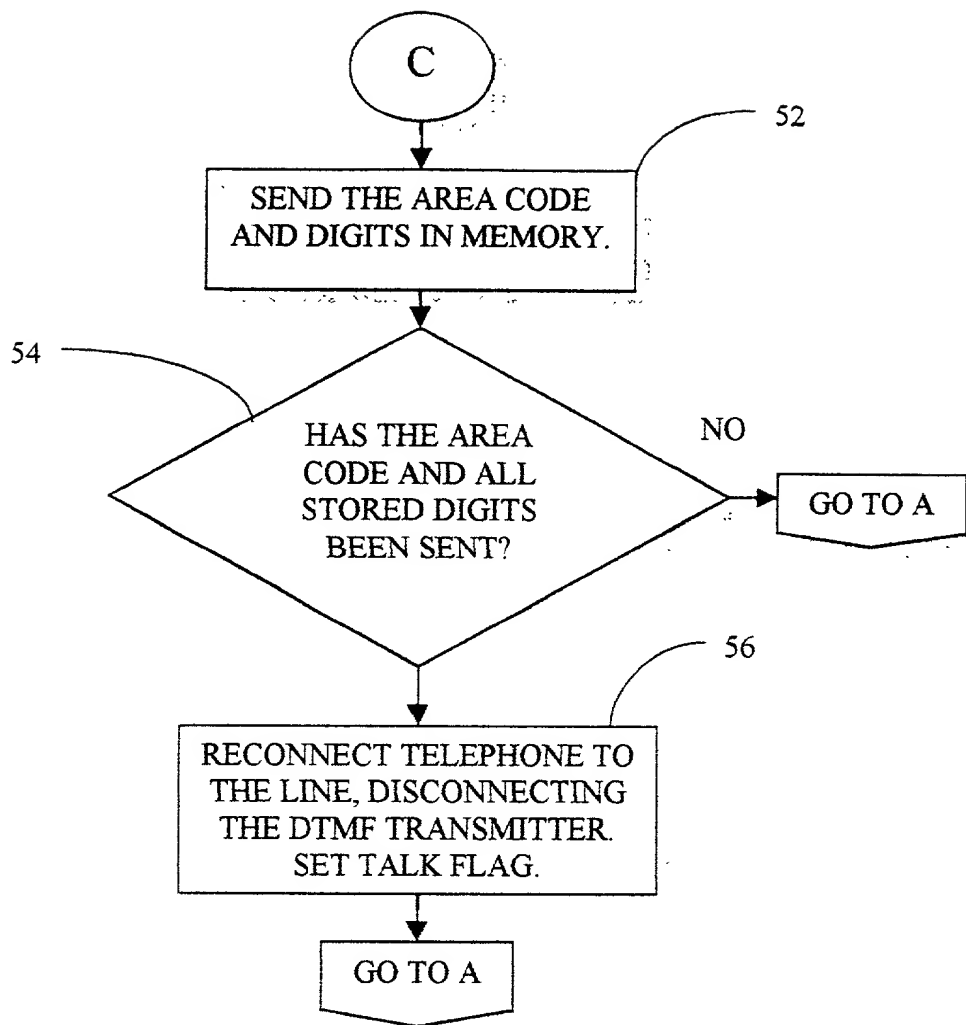


FIG. 4C

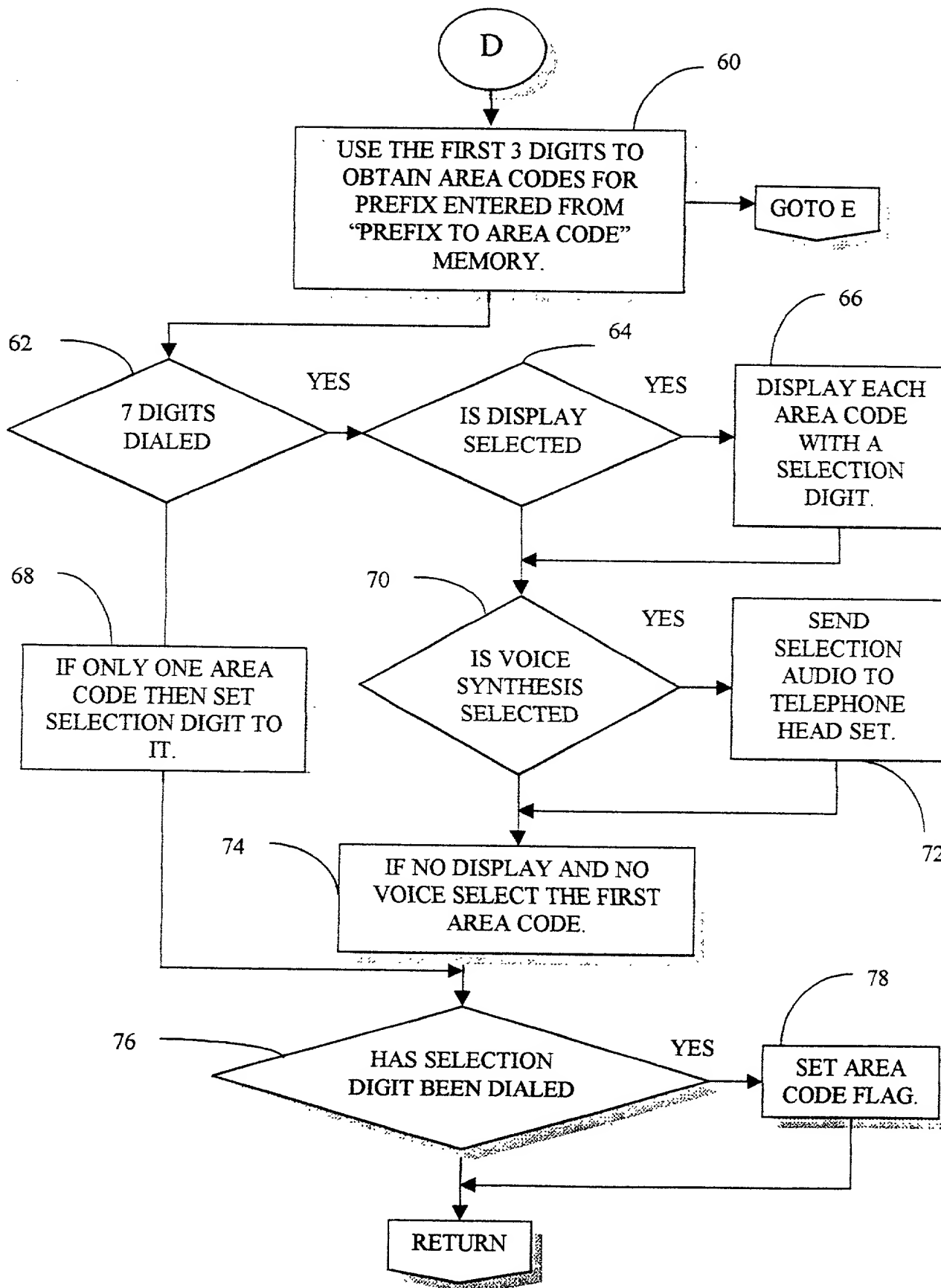


FIG. 4D

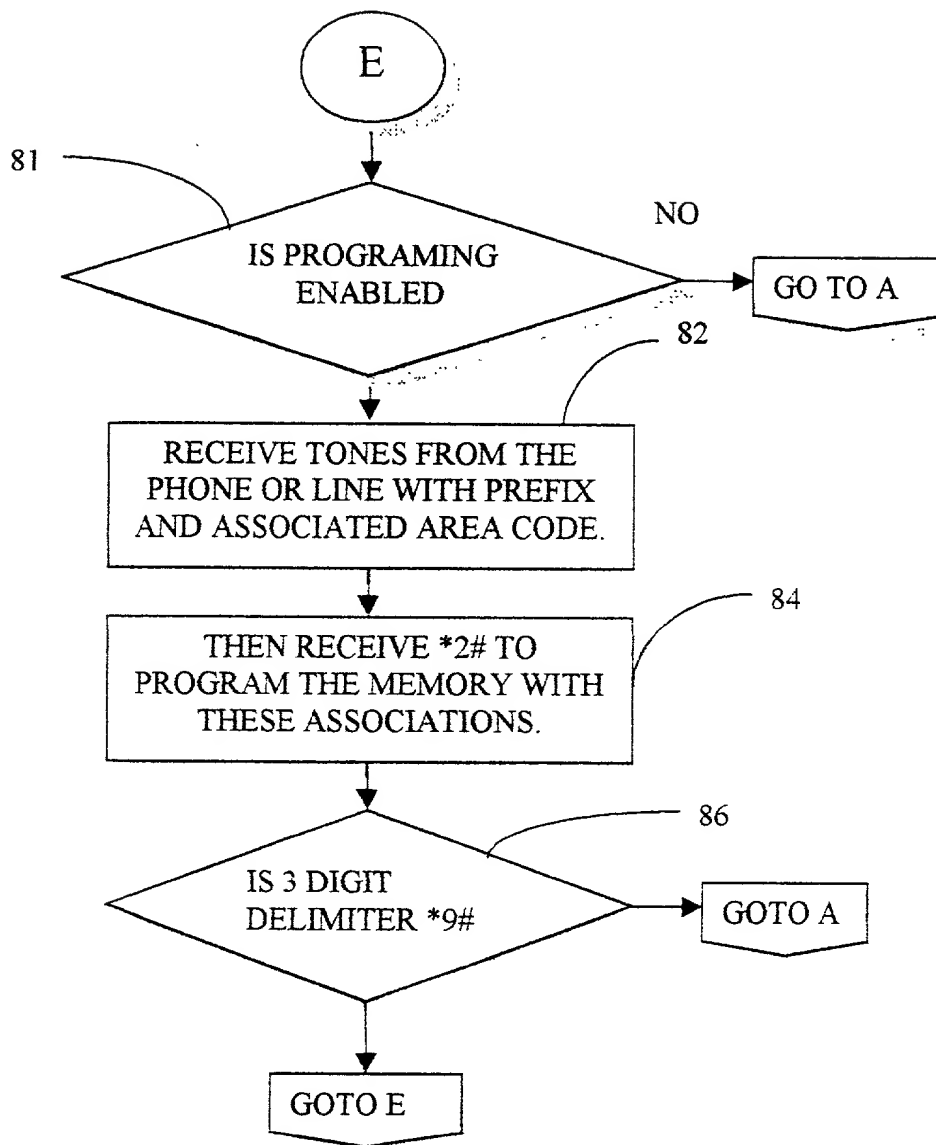


FIG. 4E

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**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

☒ Declaration Submitted with Initial Filing OR ☐ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

| | |
|--------------------------|---------------------|
| Attorney Docket Number | 447 |
| First Named Inventor | Bradley Dee Carlson |
| COMPLETE IF KNOWN | |
| Application Number | / |
| Filing Date | |
| Group Art Unit | |
| Examiner Name | |

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

INTELLIGENT TELEPHONE NUMBER DIALER AND METHOD

the specification of which *(Title of the Invention)*

☒ is attached hereto
OR

☐ was filed on (MM/DD/YYYY) as United States Application Number or PCT International

Application Number and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

| Prior Foreign Application Number(s) | Country | Foreign Filing Date (MM/DD/YYYY) | Priority Not Claimed | Certified Copy Attached? | |
|-------------------------------------|---------|----------------------------------|--------------------------|--------------------------|--------------------------|
| | | | | YES | NO |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

| Application Number(s) | Filing Date (MM/DD/YYYY) | <input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto. |
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I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

| U.S. Parent Application or PCT Parent Number | Parent Filing Date (MM/DD/YYYY) | Parent Patent Number (if applicable) |
|--|---------------------------------|--------------------------------------|
| | | |

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| William E. Hein | 26,465 | | |

☐ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

Direct all correspondence to: ☐ Customer Number or Bar Code Label

OR ☒ Correspondence address below

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:

☐ A petition has been filed for this unsigned inventor

| | | | | | |
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☒ Additional inventors are being named on the ² supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto

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Supplemental Sheet
Page 3 of 4

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| Name of Additional Joint Inventor, if any: | | <input type="checkbox"/> A petition has been filed for this unsigned inventor | | | | | |
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| Inventor's Signature | <i>Joan Parkinson Firth</i> | | | | | Date | 9/28/00 |
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| Given Name (first and middle [if any]) | | | | Family Name or Surname | | | |
| Jeffrey Clark | | | | Heidel | | | |
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| Post Office Address | | | | | | | |
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| Given Name (first and middle [if any]) | | | | Family Name or Surname | | | |
| David John | | | | Michel | | | |
| Inventor's Signature | <i>David John Michel</i> | | | | | Date | 9/28/00 |
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| Post Office Address | | | | | | | |
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|--|--------------------------------|---|---------|------------------------|--------|-------------|---------|
| Name of Additional Joint Inventor, if any: | | <input type="checkbox"/> A petition has been filed for this unsigned inventor | | | | | |
| Given Name (first and middle (if any)) | | | | Family Name or Surname | | | |
| Warren Wayne | | | | Stansberry | | | |
| Inventor's Signature | <i>Warren Wayne Stansberry</i> | | | | | Date | 4/28/00 |
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| Inventor's Signature | | | | | | Date | |
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| Given Name (first and middle (if any)) | | | | Family Name or Surname | | | |
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